



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,771	07/20/2000	Mark Ronald Sikkink	499.078US1	3666
21186	7590	02/25/2004	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			PEIKARI, BEHZAD	
			ART UNIT	PAPER NUMBER
			2186	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/619,771	SIKKINK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	B. James Peikari	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 29 December 2003.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-29 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 20 July 2000 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) Notice of References Cited (PTO-892)                    4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                    5) Notice of Informal Patent Application (PTO-152)  
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.                    6) Other:

## **DETAILED ACTION**

### ***Request for Information***

1. The previous request for information under 37 CFR 1.105 is withdrawn to respect the attorney-client privilege. However, if certain drawing figures were taken from publicly available references and then modified by hand by the inventor to produce the referenced invention disclosure, the attorney is requested to ask the client about such public references, since they have not been considered by the examiner in the examination of this application and may prove very relevant.

### ***Drawings***

2. This application lacks formal drawings. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings.

### ***Specification***

3. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drako et al., U.S. 5,371,877, in view of Rust et al., U.S. 5,699,530, and further in view of DeWilde et al., U.S. 6,434,674.

Drako et al. teach a dual bank memory system wherein each bank operates as a FIFO buffer for buffering data. Figure 2 also shows write control address logic (including, but not limited to, circuit 30) for storing data and write control timing logic (including, but not limited to, circuit 25) to selectively grant write access to the memory banks at a predetermine time. Furthermore, Figure 2 teaches read control logic to read data stored in the first and second banks (including, but not limited to, circuit 31).

As for determining where the data is to be stored by evaluating rising and falling edges of a strobe signal, this is how all signals work in data processing systems. Note the binary operation of the write bank select signal in Figures 3a and 3b.

As for determining that data will be stored in sequential memory addresses during sequential strobe cycles, this is how all FIFOs work. Note, for example, column 4, lines 13-16, or column 9, lines 7-10.

As for determining that an expected programmed time delay will occur (until the data can be read as valid, e.g.), determined independently for different units of memory, this was a fundamental procedure in memory circuit design. Note that columns 9, 10 and 11 describe the different timing delays that occur and, since they are expected, how

the Drako et al. system deals with these delays by utilizing "hold" signals until the valid data appears and is ready to be read.

Drako et al. fail to specifically mention the use of write pointers to control write access to each FIFO bank. However, this is another example of memory design which was not only widely known, but fundamental to the operation of memory systems – especially stacked memories such as FIFOs. Nevertheless, this feature is explicitly taught by Rust et al., which taught a technology fully compatible with the Drako et al. system, to the extent that the write pointers were used to manage a dual bank FIFO buffer (note, e.g., Figure 4). The motivation to combine these two systems is within the Rust et al. reference itself, which explains the benefits of utilizing pointers in dual bank FIFO systems, namely reduced circuitry requirements (note column 3 of Rust et al., lines 8-24). It would have been obvious to one having ordinary skill in the art at that time the invention was made to incorporate the write pointer operation of Rust et al. into the system of Drako et al., since (1) it would have served as an efficient means for controlling the selection of various data references (such is always true of pointers) and (2) the specific implementation of the Rust et al. pointers required less circuitry.

As for implementing the combination above with a between a controller and a SDRAM, this was not explicitly mentioned. In fact, Drako et al. did not provide any limitation with regard to the environment in which their system could have been used, except to suggest in column 1 that it could be used wherever FIFOs were used. With this in mind, DeWilde et al. taught a system in which dual ported FIFOs 26 were used between the data sourcing controllers 32 and 34 and the SDRAM 10. It would have

been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the disclosed Drako et al./ Rust et al. combination in as FIFO 26 in the DeWilde et al. system, since (1) it would have provided increased speed and efficiency by writing one FIFO bank while simultaneously reading the other, (2) the FIFO of the disclosed Drako et al./ Rust et al. combination was already set up in a way that would have allowed easy integration into the DeWilde et al. system (e.g., bus 39 of DeWilde et al. could have been connected to the data in port of bank 22 and the data out port of bank 23 of Drako et al./ Rust et al.; bus 28 of DeWilde et al. could have been connected to the data out port of bank 22 and the data in port of bank 23 of Drako et al./ Rust et al.), and since the additional cost would have been reduced by the cost saving design of Drako et al. (note column 1, lines 32 et seq., of Drako et al.)

***Allowable Subject Matter***

6. The following is a statement of reasons for the indication of allowable subject matter. The specification contains much that appears to be novel, especially with respect to the particular technical features that minimize the effects of the undefined tristate region in DDR SRAMs, wherein noise causes random strobe events. Note especially pages 7-13 of the specification. Rather, the claims appear to be directed to the features of the invention that were widely known in FIFO memory systems, such as sequential writing, using write pointers, managing time delays etc. Applicant is welcome to contact the examiner if further clarification is needed.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).  

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.
  
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Peikari whose telephone number is (703) 305-3824. The examiner is generally available between 11:00 am and 9:30 pm, EST, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim, can be reached at (703) 305-3821.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

or faxed to:

(703) 746-7239 (Official communications)

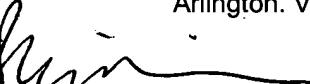
or:

(703) 746-7240 (for Informal or Draft communications)

or:

(703) 746-7238 (for After-Final communications)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

  
B. James Peikari  
Primary Examiner  
Art Unit 2186

February 22, 2004